

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-271243

(43)Date of publication of application : 09.10.1998

(51)Int.Cl.

H04M 11/06

H04L 12/28

H04M 1/00

(21)Application number : 09-087500

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(22)Date of filing : 21.03.1997

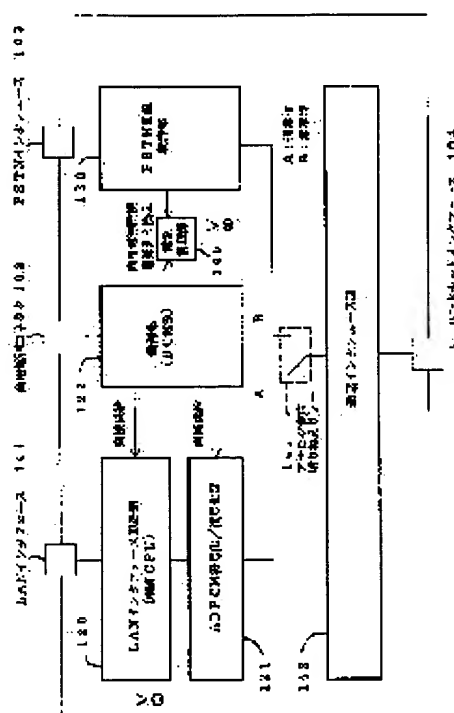
(72)Inventor : ISHII SHUZO

(54) LAN TELEPHONE SET

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a LAN(local area network) telephone set capable of being serviced to a line wire even in the case of the occurrence of a fault in a LAN or the service interruption of a commercial power supply system.

SOLUTION: A LAN interface circuit part 120 periodically monitors a state inquiry packet from a LAN private branch exchange; and if it does not receive this state inquiry packet, it discriminates the occurrence of a fault in the LAN and switches a relay 141 from a terminal A (ADPCM encoding/decoding part 121) to a terminal B (PSTN public switching telephone network) by the control signal,. The relay 141 switches a service interface part 142 to PSTN at the time of power failure of a commercial power.



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CLAIMS

[Claim(s)]

[Claim 1]A fault detection means which detects an obstacle on LAN, and a public telephone network interface which performs call control and communications control with a public telephone network, LAN telephone which has a circuit switching means which switches a speech path to said public telephone network interface from said LAN when said fault detection means detects an obstacle on said LAN.

[Claim 2]A power failure detecting means which detects interruption to service of commercial power, and a public telephone network interface which performs call control and communications control with a public telephone network, LAN telephone which has a circuit switching means which switches a speech path to said public telephone network interface from LAN when said power failure detecting means detects interruption to service of commercial power.

[Claim 3]A fault detection means which detects an obstacle on LAN, and a power failure detecting means which detects interruption to service of commercial power, A public telephone network interface which performs call control and communications control with a public telephone network, LAN telephone which has a circuit switching means which switches a speech path to said public telephone network interface from said LAN when said fault detection means detects an obstacle on said LAN, or when said power failure detecting means detects interruption to service of commercial power.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the LAN telephone in a LAN (Local Area Network) private-brand-exchange network.

[0002]

[Description of the Prior Art]While using LAN telephone as the extension by making LAN into a private branch exchange generally, the LAN private-brand-exchange network to which ISDN (Integrated Services Digital Network) which is a public network, and PSTN (Public Switched Telephone Networks) were connected as outside line is known.

[0003]

[Problem(s) to be Solved by the Invention]However, in the conventional LAN telephone, when an obstacle occurs in LAN, there is a problem that a line wire call becomes impossible, as well as an extension telephone call. Since a power supply is usually supplied to LAN telephone from commercial power unlike the PSTN telephone to which a power supply is supplied from PSTN, there is a problem that a line wire call becomes impossible at the time of interruption to service.

[0004]An object of this invention is to provide the LAN telephone in which a line wire call is possible in view of the above-mentioned conventional problem, even if an obstacle occurs in LAN. An object of this invention is to provide again the LAN telephone in which a line wire call is possible, even if commercial power fails for power.

[0005]

[Means for Solving the Problem]When an obstacle on LAN is detected, this invention switches a speech path to a public telephone network interface from LAN, while forming a public telephone network interface which performs call control and communications control with a public telephone network to achieve the above objects. This invention switches a speech path to a public telephone network interface from LAN at the time of interruption to service of commercial power while forming again a public telephone network interface which performs call control and communications control with a public telephone network.

[0006]Namely, a fault detection means which detects an obstacle on LAN according to this invention, LAN telephone which has a public telephone network interface which performs call control and communications control with a public telephone network, and a circuit switching means which switches a speech path to said public telephone network interface from said LAN when said fault detection means detects an obstacle on said LAN is provided.

[0007]A power failure detecting means which detects interruption to service of commercial power according to this invention, LAN telephone which has a public telephone network interface which performs call control and communications control with a public telephone network, and a circuit switching means which switches a speech path to said public telephone network interface from LAN when said power failure detecting means detects interruption to service of commercial power is

provided.

[0008]A fault detection means which detects an obstacle on LAN according to this invention, A power failure detecting means which detects interruption to service of commercial power, and a public telephone network interface which performs call control and communications control with a public telephone network, LAN telephone which has a circuit switching means which switches a speech path to said public telephone network interface from said LAN when said fault detection means detects an obstacle on said LAN, or when said power failure detecting means detects interruption to service of commercial power is provided.

[0009]

[Embodiment of the Invention]Hereafter, an embodiment of the invention is described with reference to drawings. The block diagram showing the LAN (Local Area Network) private-brand-exchange network with which the 1 embodiment of the LAN telephone which drawing 1 requires for this invention was applied, and drawing 2 are the block diagrams showing the LAN telephone of PSTN correspondence of drawing 1 in detail.

[0010]LAN1 shown in drawing 1 is the network which comprised cables, such as 10BASE-T, and the audio signal on this LAN1 is transmitted by a packetized voice including numerals audio signals, such as ADPCM and LD CELP (G. 728). The LAN telephone 10-1 which is an extension-telephone terminal LAN1, 10-2, and 10-3, LAN private branch exchange 17 which performs exchange control of LAN1 is connected with the ISDN (Integrated Services Digital Network) gateway 13 and the PSTN (Public Switched Telephone Networks) gateway 15 which are terminal units.

[0011]The ISDN gateway 13 performs the protocol conversion between ISDN30 and LAN1 which is a digital public communication network, and the PSTN gateway 15 performs the protocol conversion between PSTN31 and LAN1 which is an analog telephone network. In this example, PSTN31 and ISDN30 are connected for the LAN telephone 10-2 and 10-3, respectively.

[0012]Drawing 2 shows the LAN telephone 10-2 corresponding to PSTN, and this LAN telephone 10-2 as an interface with an external instrument, LAN interface 101 for outputting and inputting the LAN packet which contains a call control packet and a packetized voice between LAN1, It has PSTN interface 103 connected to PSTN31 as an object for the backup at the time of the commercial power connector 102 to which electric power is supplied from commercial power, the obstacle of LAN1, and interruption to service of commercial power, and the hand set interface 104 connected to the hand set 10a.

[0013]The LAN interface circuit part 120 has control CPU, and conducts control of LAN1, analysis of the LAN packet outputted and inputted via LAN1 and LAN interface 101, etc. While ADPCM-code-izing / decoding section 121 ADPCM-code-izes the transmission voice signal of the analog from the terminal A of the relay 141 and transmits to the LAN interface circuit part 120, The ADPCM code which received via the LAN interface circuit part 120 is decrypted to the audio signal of an analog, and it outputs to the terminal A of the relay 141. The power supply section 122 rectifies and constant-voltage-izes commercial power of the exchange to which electric power was supplied via the commercial power connector 102, and supplies a power supply required for the LAN interface circuit part 120, the ADPCM-code-izing / decoding section 121, the power-supply-management department 140, etc.

[0014]The terminal B of the relay 141 is connected to PSTN interface 103 via the PSTN line seat part 130. The PSTN line seat part 130 performs net control (closing of a circuit, sending out of a dial signal) of PSTN31, or, Carry out the termination of the line impedance, take out the DC power supply by office electric supply of PSTN31, the analog voice signal inputted from PSTN31 is outputted to the terminal B of the relay 141, or the analog voice signal from the terminal B of the relay 141 is outputted to PSTN31. The telephone call interface part 142 is connected with the common terminal of the relay 141 between the hand set interfaces 104.

[0015]While supplying a power supply required for the telephone call interface part 142, the power-supply-management department 140 the power supply from the power supply section 122 or the

PSTN line seat part 130, When the power supply is supplied from the power supply section 122, signal ** for driving the relay 141 to the coil (graphic display abbreviation) of the relay 141 is supplied (signal ** shows the result of having detected the DC power supply generated by the power supply section). When signal ** is not supplied from the power-supply-management department 140 to the relay 141, At the time of interruption to service of commercial power, the telephone call interface part 142 Namely, the terminal B side, That is, it is constituted when electric power is supplied from commercial power so that [when it connects with the PSTN line seat part 130 side and signal ** is supplied, namely,] the telephone call interface part 142 may be connected to the terminal A 121, i.e., ADPCM-code-izing / decoding section, side.

[0016]The LAN interface circuit part 120 supervises the state inquiry packet from LAN private branch exchange 17 for every predetermined time, When this state inquiry packet is not received, it judges that the obstacle occurred in LAN1, and it switches to the terminal B side from the terminal A of the relay 141 by that control signal ** (signal ** shows the result of having supervised the state inquiry packet from LAN private branch exchange 17 during scheduled time). Therefore, since the telephone call interface part 142 switches from ADPCM-code-izing / decoding section 121 to PSTN31 side at the case where an obstacle occurs in LAN1, and the time of interruption to service, it can send via PSTN31. The LAN telephone 10-2 supervises an obstacle independently, or traffic volume is measured, and when traffic is extremely heavy, it may be made for it to be with obstacles, or to switch. In this case, a monitor means is established in the LAN telephone 10-2, respectively, and it constitutes so that the relay 141 may be switched with that output.

[0017]Although drawing 2 explained the LAN telephone 10-2 which uses PSTN31 as a backup line, In the case of the LAN telephone 10-3 using ISDN30 which is a digital public communication network as a backup line, ISDN30 can be used as a backup line by providing the ISDN interface and ISDN circuit seat part which perform the call control and communications control of ISDN30 instead of PSTN interface 103 shown in drawing 2, and the PSTN line seat part 130.

[0018]

[Effect of the Invention]As explained above, while forming the public telephone network interface which performs call control and communications control with a public telephone network according to this invention, Since the speech path was switched to the public telephone network interface from LAN when the obstacle on LAN was detected, even if an obstacle occurs in LAN, the LAN telephone in which a line wire call is possible is realizable. While this invention forms again the public telephone network interface which performs call control and communications control with a public telephone network, Since the speech path was switched to the public telephone network interface from LAN at the time of interruption to service of commercial power, even if commercial power fails for power, the LAN telephone in which a line wire call is possible is realizable.

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TECHNICAL FIELD

[Field of the Invention]This invention relates to the LAN telephone in a LAN (Local Area Network) private-brand-exchange network.

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PRIOR ART

[Description of the Prior Art]While using LAN telephone as the extension by making LAN into a private branch exchange generally, the LAN private-brand-exchange network to which ISDN (Integrated Services Digital Network) which is a public network, and PSTN (Public Switched Telephone Networks) were connected as outside line is known.

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EFFECT OF THE INVENTION

[Effect of the Invention]When the obstacle on LAN was detected while forming the public telephone network interface which performs call control and communications control with a public telephone network in this invention as explained above, the speech path was switched to the public telephone network interface from LAN.

Therefore, even if an obstacle occurs in LAN, the LAN telephone in which a line wire call is possible is realizable.

While this invention forms again the public telephone network interface which performs call control and communications control with a public telephone network, Since the speech path was switched to the public telephone network interface from LAN at the time of interruption to service of commercial power, even if commercial power fails for power, the LAN telephone in which a line wire call is possible is realizable.

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TECHNICAL PROBLEM

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MEANS

[Means for Solving the Problem]When an obstacle on LAN is detected, this invention switches a speech path to a public telephone network interface from LAN, while forming a public telephone network interface which performs call control and communications control with a public telephone network to achieve the above objects. This invention switches a speech path to a public telephone network interface from LAN at the time of interruption to service of commercial power while forming again a public telephone network interface which performs call control and communications control with a public telephone network.

[0006]Namely, a fault detection means which detects an obstacle on LAN according to this invention, LAN telephone which has a public telephone network interface which performs call control and communications control with a public telephone network, and a circuit switching means which switches a speech path to said public telephone network interface from said LAN when said fault detection means detects an obstacle on said LAN is provided.

[0007]A power failure detecting means which detects interruption to service of commercial power according to this invention, LAN telephone which has a public telephone network interface which performs call control and communications control with a public telephone network, and a circuit switching means which switches a speech path to said public telephone network interface from LAN when said power failure detecting means detects interruption to service of commercial power is provided.

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[Embodiment of the Invention]Hereafter, an embodiment of the invention is described with reference to drawings. The block diagram showing the LAN (Local Area Network) private-brand-exchange network with which the 1 embodiment of the LAN telephone which drawing 1 requires for this invention was applied, and drawing 2 are the block diagrams showing the LAN telephone of PSTN correspondence of drawing 1 in detail.

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[0015]While supplying a power supply required for the telephone call interface part 142, the power-supply-management department 140 the power supply from the power supply section 122 or the PSTN line seat part 130, When the power supply is supplied from the power supply section 122, signal ** for driving the relay 141 to the coil (graphic display abbreviation) of the relay 141 is supplied (signal ** shows the result of having detected the DC power supply generated by the power supply section). When signal ** is not supplied from the power-supply-management department 140 to the relay 141, At the time of interruption to service of commercial power, the telephone call interface part 142 Namely, the terminal B side, That is, it is constituted when electric power is supplied from commercial power so that [when it connects with the PSTN line seat part 130 side and signal ** is supplied, namely,] the telephone call interface part 142 may be connected to the terminal A 121, i.e., ADPCM-code-izing / decoding section, side.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a block diagram showing the LAN (Local Area Network) private-brand-exchange network with which one embodiment of the LAN telephone concerning this invention was applied.

[Drawing 2]It is a block diagram showing the LAN telephone of PSTN correspondence of drawing 1 in detail.

[Description of Notations]

10-1, 10-2, 10-3 LAN telephone

30 ISDN

31 PSTN

103 PSTN interface

120 LAN interface circuit part (fault detection means)

122 Power supply section

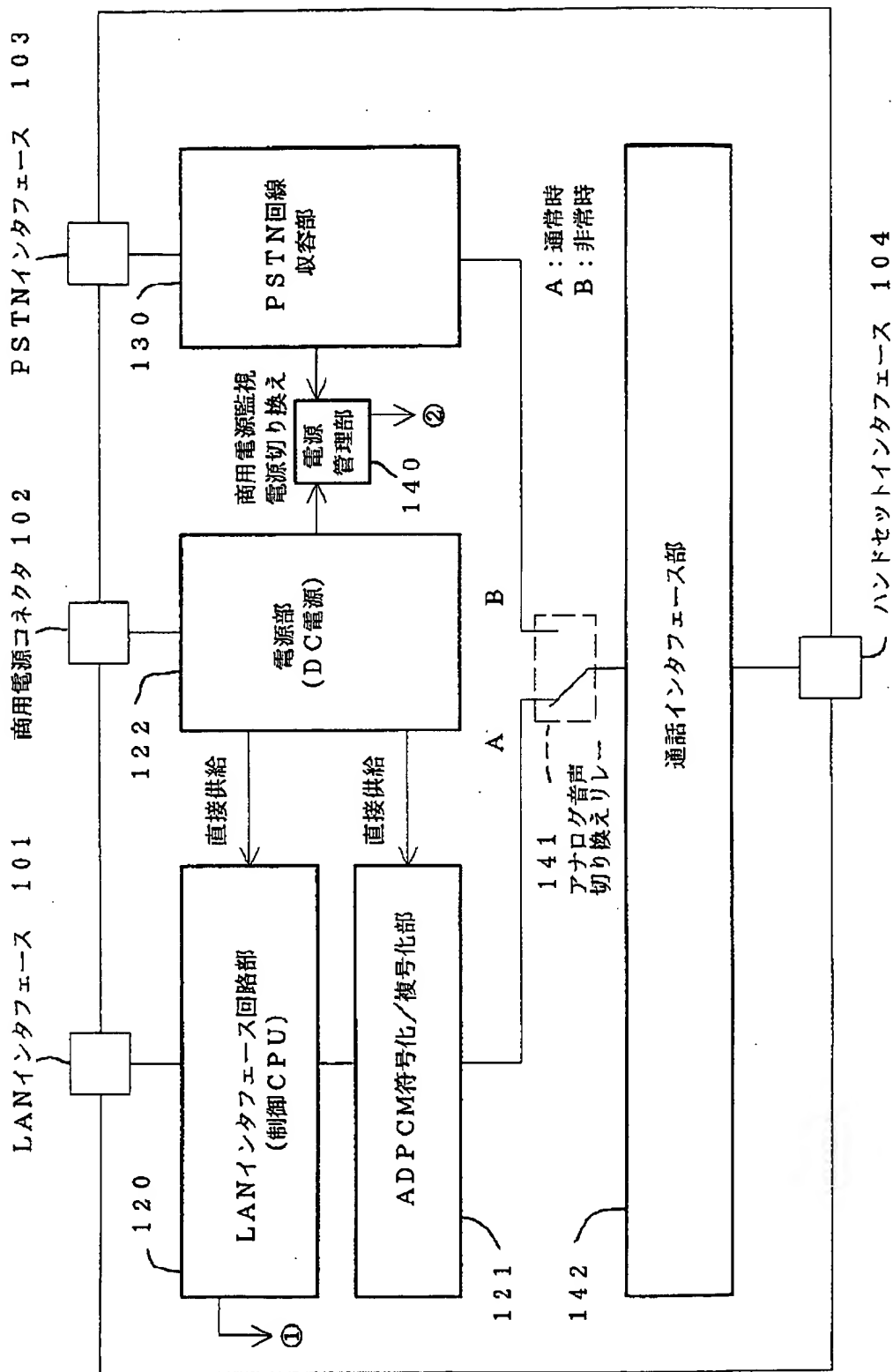
130 PSTN line seat part (a public telephone network interface is constituted with PSTN interface 103)

140 Power-supply-management department (power failure detecting means)

141 Relay (circuit switching means)

142 Telephone call interface part

[Translation done.]



- ① LAN構内交換機からの状態問い合わせパケットを定時間監視した結果を示す信号
- ② 電源部により生成されたDC電源を検出した結果を示す信号

